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INTERMOUNTAIN REGION

DOUGLAS-FIR TUSSOCK MOTH[1] MONITORING IN SOUTHERN IDAHO 1986

by

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ABSTRACT

The 1986 detection survey for Douglas-fir tussock moth indicates populations are increasing from the 1985 level. However, they are currently below levels historically associated with defoliation, and no defoliation is expected in 1987.

INTRODUCTION

The Douglas-fir tussock moth is a defoliator of Douglas-fir, grand fir, and subalpine fir. Populations of this defoliator rapidly increase to epidemic levels necessitating detection methods to accurately predict population increases. Survey methods (Daterman et al. 1979, Mason 1979) have been designed to predict future levels of defoliation and allow time to develop and implement management alternatives. Pheromone-baited sticky traps are used in early detection surveys to monitor populations of adult moths. The potential for host defoliation is determined by the number of moths recovered from the traps during the previous field season. This early detection method has been used operationally in southern Idaho since 1981. This evaluation presents the results of the 1986 early detection survey.

METHODS

Tussock moth populations were evaluated by deploying pheromone-baited sticky traps at 21 locations on the Boise, Payette, Salmon, and Sawtooth National Forests, adjacent State of Idaho lands, and Bureau of Land Management administered lands. I chose locations where Douglas-fir tussock moth had been noted previously from defoliation or trap catch records (Ollieu 1978, Thier and Mocettini 1984). Using the procedures outlined by Daterman et al. (1979), pheromone-baited sticky traps, obtained from the USDA Forest Service Methods

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Application Group, were placed at each location between July 28 and August 7, 1986, and retrieved between September 27 and November 7, 1986. Captured moths were identified and the average number of moths per trap computed. Data were then interpreted according to Daterman et al. (1979).

RESULTS AND DISCUSSION

I recovered adult moths at all 1986 survey sites (Table 1). Although average numbers of moths caught per trap have increased from 1985 levels, with the exception of Seid Creek, all are below the high levels noted in previous surveys.

An average of 25 moths per trap indicates the potential for visible defoliation in the next two summers (Daterman et al. 1979). This 25 moth threshold has been used as an indicator to begin larval surveys.

Field experience has shown the 25 moth threshold to vary with location and site specific thresholds can be developed to more accurately predict population increases. However, a threshold of 25 moths/trap should be used to initiate an intensified moth trapping effort, and a threshold of 40 moths/trap should be used to begin larval surveys in anticipation of serious defoliation (Sower pers. comm).

From trapping results preceding the tussock moth outbreak in the Owyhee Mountains in 1982 and 1983 (Tunnock et al. 1985), it appears that the mean number of moths per trap must reach approximately 50 to 55 before defoliation may be expected in that area. Since the 1986 trap catches were well below this level, I would not expect significant defoliation in the Owyhee Mountains in 1987 and larval surveys are not needed.

In areas on the Payette National Forest, notably Adams Creek, East Fork Brownlee Creek, Fourbit Creek, and Olive Creek, defoliation has not occurred even when average catches of 50 or more moths per trap were found (Table 1). Thus, even though 46.8 moths/trap were found at Olive Creek, defoliation is not anticipated, but a follow-up larval survey is indicated.

A record high trap catch of 34.6 moths/trap was found at Little Water Gulch on the Sawtooth National Forest. I feel this trap catch is too low to cause defoliation in 1987, but recommend a larval survey because this area has been previously defoliated (Tunnock et al. 1985). Additionally, sampling may provide an opportunity to establish a better early detection survey threshold for the area and more precisely predict the future population trend.

The 1986 survey results do not approximate historic outbreak levels, and visible defoliation is not anticipated at any of the 1986 survey locations. Trap catches are sufficiently high to warrant larval surveys at the Little Water Gulch and Olive Creek sites. Continuation of the early detection survey is important to monitor population fluctuations and traps will again be deployed in 1987.

Table 1. Summary of male Douglas-fir tussock moths caught in pheromone-baited sticky traps distributed in southern Idaho - 1980 - 1986

Plot	Location Twp.	Rge.	Sec.	Mean Number of Male Douglas-fir Tussock Moths/Trap by Year 1980	1981	1982	1983	1984	1985	1986
Boise N. F.										
Anderson Creek Divide	14N	2E	14	N.S.[1]	1.2	0	11.0	N.S.	N.S.	N.S.
Bear Creek	4N	10E	7	N.S.	N.S.	0	32.8	0.4	0	1.2
Skunk Creek	12N	4E	14	N.S.	0.2	0.6	29.0	0	1.0	1.2
Yellow Pine Creek	3N	10E	35	N.S.	N.S.	0	10.6	0.4	N.S.	N.S.
Payette N. F.										
Adams Creek	14N	6W	23	N.S.	N.S.	53.6	39.6	7.8	4.0	17.6
Barinaga Corral	20N	2W	23	N.S.	N.S.	N.S.	44.2	0.4	2.8	4.0
Bear Saddle	15N	5W	31	N.S.	N.S.	15.2	44.0	1.0	0.2	0.2
Brown's Pond	18N	4E	3	N.S.	0	0.6	11.0	0.5	N.S.	N.S.
E. Fk. Brownlee Creek	16N	4W	3	N.S.	N.S.	61.2	50.6	2.6	3.4	27.0
Fourbit Creek	13N	2E	7	N.S.	N.S.	49.8	42.8	N.S.	4.8	30.4
Little Weiser	13N	1E	1	N.S.	N.S.	N.S.	25.6	N.S.	0.6	0.4
McDowell Trail	17N	2W	17	N.S.	N.S.	N.S.	35.8	5.0	6.8	24.6
Olive Creek	17N	2W	7	N.S.	N.S.	36.8	51.2	14.6	10.5	46.8
Seid Creek	16N	4W	21	N.S.	N.S.	N.S.	17.4	11.2	N.S.	27.2
Stacy Creek	14N	6W	14	N.S.	N.S.	N.S.	42.8	18.0	8.8	3.8
Salmon N. F.										
Arnett Creek	22N	20E	30	N.S.	N.S.	0	0.6	0	N.S.	N.S.
Colson Creek	23N	16E	12	N.S.	N.S.	15.2	39.0	3.2	N.S.	7.2
Headwaters	20N	20E	9	N.S.	N.S.	N.S.	N.S.	0	N.S.	N.S.
Lick Creek	26N	22E	32	N.S.	N.S.	7.6	38.4	0.6	N.S	6.0
Porphyry Creek	20N	18E	34	N.S.	N.S.	0	4.6	0	N.S.	N.S.
Sawtooth N. F.										
Couch Summit	2N	14E	9	N.S.	0.4	0	7.0	0	N.S.	N.S.
Howell Canyon	12S	25E	31	N.S.	N.S.	N.S.	N.S.	0.2	N.S.	N.S.
Little Water Gulch	3N	12E	7	N.S.	3.8	13.6	27.0	17.2	0	34.6
Virginia Gulch	3N	11E	9	N.S.	0.6	2.0	26.8	1.8	0	4.8
Warm Springs	4N	17E	14	N.S.	N.S.	2.6	14.8	0.8	N.S.	N.S.
Idaho State Lands										
Sharps Canyon	2N	19E	36	N.S.	19.4	16.2	41.2	1.3	5.2	22.6
B.L.M Lands										
Dewey Peak	6S	4W	3	55.0	64.0	N.S.	N.S.	15.0	1.6	33.7
Mill Creek	8S	5W	12	0.6	47.6	N.S.	N.S.	6.6	0	0.4
New York Summit	4S	3W	32	N.S.	N.S.	N.S.	N.S.	0	N.S.	1.8
So. Fk. Boulder Creek	8S	5W	24	N.S.	N.S.	N.S.	N.S.	0.7	0.2	1.8

[1] N.S. - not sampled

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